JUNE • JULY 1960

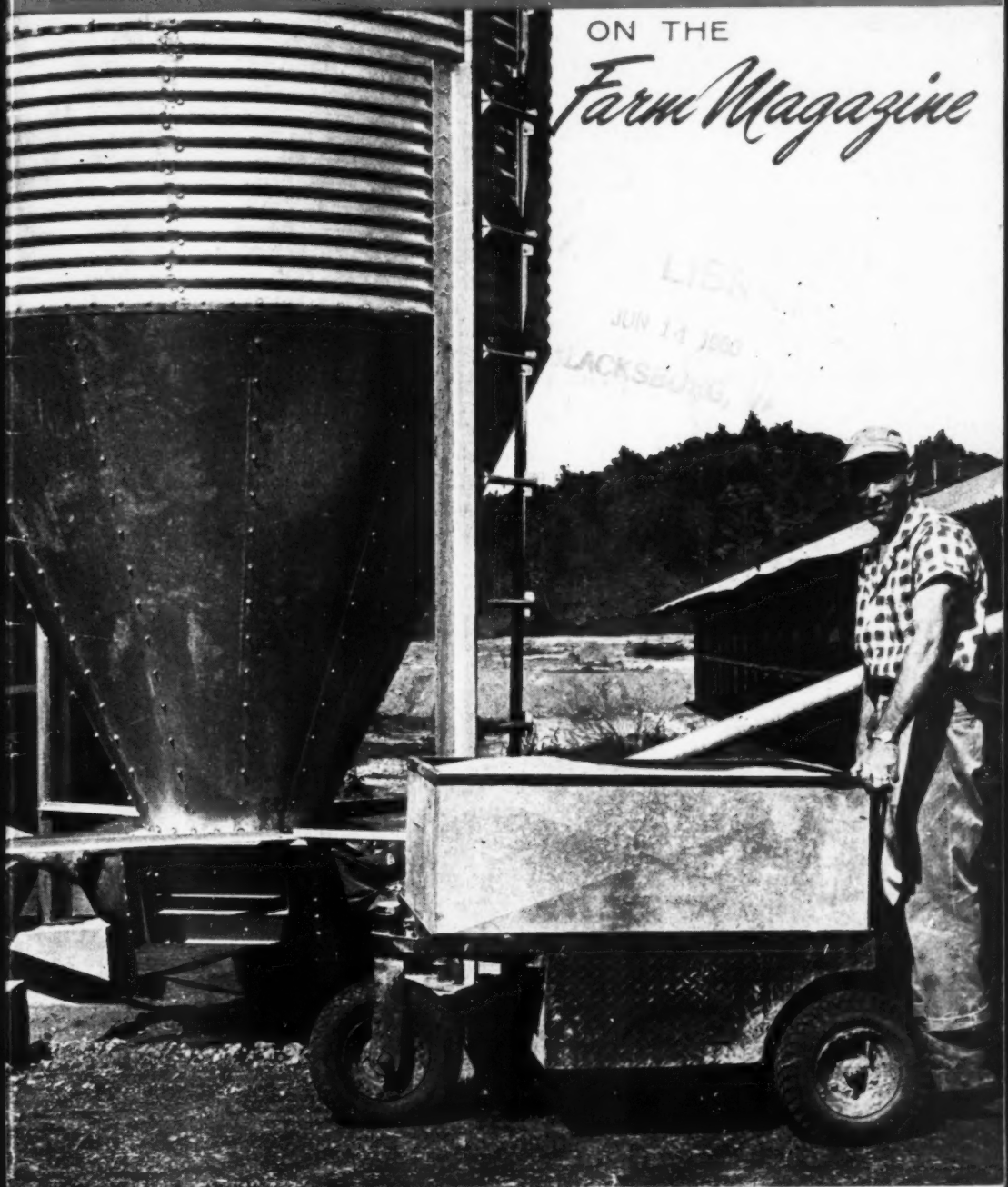
Chicken feed is not only what this cart carries, but also what it costs to run. Battery-powered vehicle is recharged nightly, used in feeding and egg collecting with caged layers. *See p. 31.*

SOUTHEAST EDITION

ELECTRICITY

ON THE

Farm Magazine



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KitchenAid®
THE DEPENDABLE DISHWASHER

gets you there on time

The big game won't wait for dishes, but your KitchenAid dishwasher solves the problem. No pre-rinsing—just load it and leave it. Here's what KitchenAid does for you:

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Dependability. Long life is synonymous with the KitchenAid name. Rarely is service needed. A complete line of models, portable or built-in—there's a KitchenAid for every kitchen. Every piece, even in large loads, is thoroughly washed clean.

Quality is KitchenAid—in workmanship, performance and appearance. Your neighbor who owns one is your best reference. Ask her. See the Yellow Pages for your nearest dealer or write KitchenAid Home Dishwasher Division, The Hobart Manufacturing Company, Dept. KEF, Troy, Ohio. (In Canada, write Hobart, 175 George St., Toronto 2.)

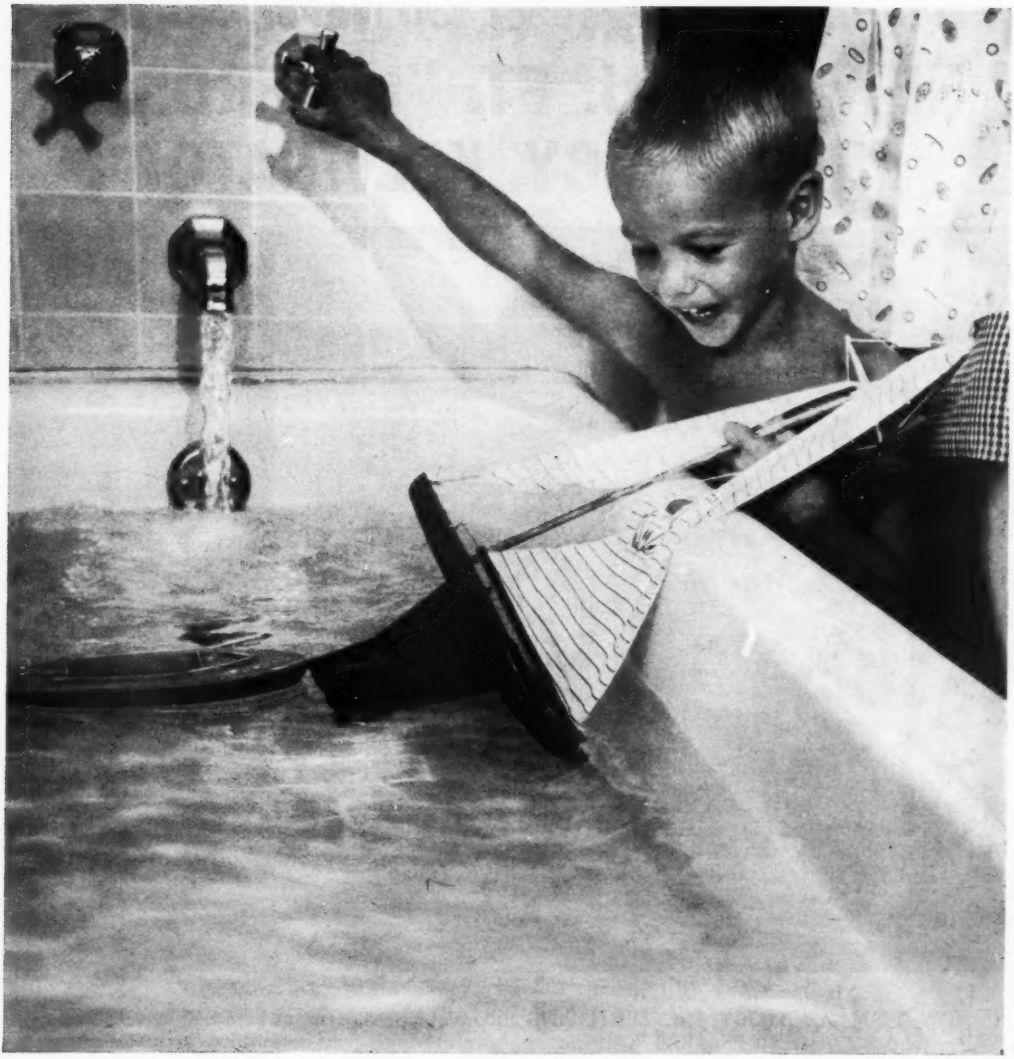
Look for the BIG, BLUE WASH ARM

More time for living with

KitchenAid®

AUTOMATIC DISHWASHERS

by Hobart, the world's largest manufacturer of food, kitchen and dishwashing machines



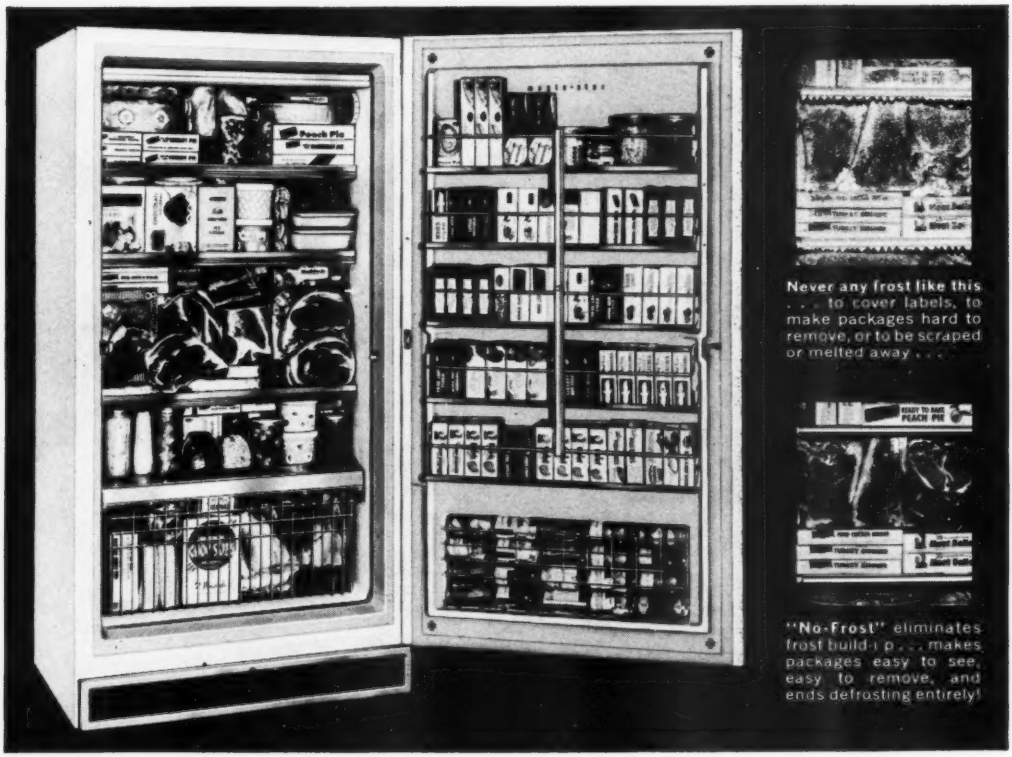
Another OCEAN by **Myers**

Nothing like a good Sea Battle to entice a "young Admiral" into the tub . . . You can depend on it, just as you can depend on your Myers pump to provide the "oceans" of water you need. Quietly, efficiently and economically an OLYMPIAN pump by Myers takes "all the Battle" out of water problems. Contact your Authorized Myers Pump Dealer today! He's fully qualified to engineer the right pumping system for your home or farm.

Myers **The F. E. Myers & Bro. Co.**
ASHLAND, OHIO KITCHENER, ONTARIO

It's Here! The Freezer You Never Defrost!

NEW 14 CU. FT. "NO-FROST" FREEZER BY KELVINATOR


Never any frost like this . . . to cover labels, to make packages hard to remove, or to be scraped or melted away . . .
"No-Frost" eliminates frost build-up . . . makes packages easy to see, easy to remove, and ends defrosting entirely!

NOW YOU CAN ENJOY FREEZER LIVING —without freezer defrosting! Kelvinator "No-Frost" eliminates all frost build-up . . . from packages, shelves, walls!

You get the Plus of safer, more uniform temperatures, too . . . assuring complete frozen food protection during the maximum safe-storage period.

And Kelvinator gives you every storage convenience . . . roll-out storage basket, wonderful Magic-Stor door, juice can rack, safety signal light, safety door latch, adjustable and removable shelves.

All of this is backed by *triple warranty protection* . . . one year on the complete freezer, four additional years on the unit, and five years against food spoilage!

See your Kelvinator dealer soon!

There's A PLUS For You In Every Appliance Made By

Kelvinator **Division of American Motors Corp. Detroit 32, Michigan**

Refrigerators, Ranges, Washers, Dryers, Home Freezers, Disposers, Room Air Conditioners, Dishwashers, Water Heaters, Dehumidifiers

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SOUTHEAST EDITION

ELECTRICITY ON THE *Farm Magazine*

A REUBEN H. DONNELLEY PUBLICATION

JUNE-JULY, 1960—VOL. 33, NO. 6

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Published monthly except combination issues June-July and Aug.-Sept. by Magazine Publishing Division, The Reuben H. Donnelley Corp., 466 Lexington Ave., New York 17, N. Y.

Branch Offices—59 E. Van Buren St., Chicago 5, Ill.; Fidelity Union Life Building, Dallas 1, Tex.; 2535 Layton Drive, Lithonia, Georgia; 22 Battery St., San Francisco 11, Calif.; 5478 Wilshire Blvd., Los Angeles 36, Calif.

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Subscription rates: $1.25 per year; $2.00 for 2 years; $3.00 for 4 years. 15¢ per copy. Bulk rates on request. Accepted as controlled circulation publication at Dayton, Ohio.

POSTMASTER: Send changes of address (Form 3579) to Electricity on the Farm, 466 Lexington Ave., New York 17, N. Y.

EDITORS' CHAT

RESEARCH REVEALS BETTER WAYS

This year the average farm worker is going to produce enough food and fiber for himself and 23 other Americans. Total farm production is expected to be about twice what it was in 1942. The significant thing is that this production will be achieved by substantially fewer farmers on about the same acreage that we had 18 years ago. There are many things that have helped attain this level of efficiency—labor-saving methods and machinery, new crop varieties, better land utilization—and more developments are on the way. Scientists are constantly seeking better methods.

As an example, it may well be that bulk handling and curing of tobacco is just around the corner. North Carolina scientists are ready to field-test a new bulk curing system. Think what it could mean to tobacco growers who now require more than 400 man-hours of labor per acre to produce, harvest and cure the crop. In this issue we bring you a report on the experimental bulk curing system (page 8), continuing our effort to help you keep up with research that may affect you in the years immediately ahead.

ALBERT MORRIS

NEW 3-A STANDARDS FOR BULK MILK TANKS

We would like to call your special attention to the report on page 12. It outlines some of the new 3-A standards for bulk milk tanks which become effective September 1, 1960. If you are in a milkshed area which requires close adherance to 3-A standards for bulk milk cooling equipment, you will want to investigate these standards thoroughly before purchasing a new tank.

"ENJOY FARM LIFE—PRACTICE SAFETY"

President Eisenhower has proclaimed July 24-30 as National Farm Safety Week. The theme for this 17th annual observance is "Enjoy farm life—practice safety".

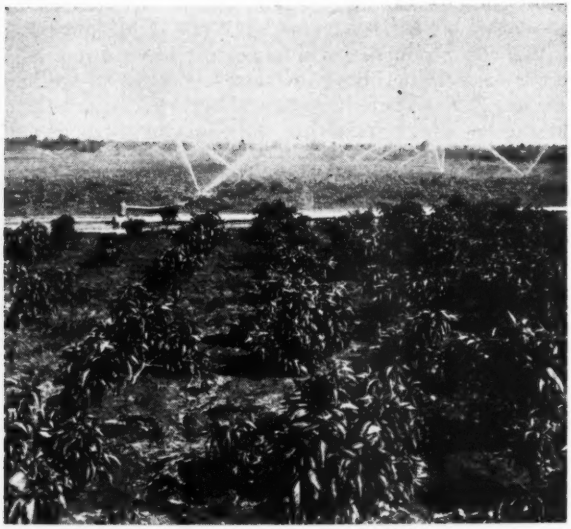
Sponsored jointly by the National Safety Council and U. S. D. A., the week focuses nationwide attention on the farm safety problem. The high death rate and enormous financial losses due to farm accidents are reasons why we believe farm safety is for everyone—the whole year-round. Let's practice safety in everything we do this year and avoid becoming an accident statistic for 1960.

HUGH HANSEN

Even when total annual rainfall is high . . .

Irrigating During Dry Spells

By JOHN A. CAMPBELL*



Sprinkler irrigation system in operation on 50-acre pimento pepper field at Austin Long farm, Tchula, Mississippi.

We have 55 inches of rainfall a year. Why irrigate?

That question is often asked by visitors to the Truck Crops Branch Experiment Station, Crystal Springs, Mississippi. It is hard to understand the necessity for irrigating where the annual rainfall is 50 to 60 inches. After all, 50 inches of water is enough to grow three crops—one after the other—if the water is applied in the proper amounts and at the right times.

Unfortunately, rainfall does not come at regular intervals or in uniform amounts. Frequently, the bulk of the year's rainfall comes within a 3 or 4 month period, with droughty spells occurring during the rest of the year.

Droughts Occur Almost Every Year

For practical purposes, we can define a drought in the Southeast as a period of 14 days or more with less than 0.24 inches of rainfall within 24 hours. When such periods are plotted on a chart by months over a period of many years, it is found that droughts occur almost every year at some time during the growing season.

Over a period of years, considerable experimental work has been done at the Truck Crops Station on the irrigation of vegetable crops. Included in this work were cabbage, cauliflower, broccoli, beans, beets, carrots, onions, okra, sweet corn, southern peas, squash, mustard, endive, lettuce, turnips, tomatoes, sweet potatoes, pepper, spinach, cucumbers, cantaloupes and watermelons. All of these crops gave good response during a drought period to applications of 1½ to 2 inches of water applied through a sprinkler system or the furrow-flood method.

Makes Possible Additional Crops

During the fall of 1952 only 3.1 inches of rain fell from the first of August through October at Crystal Springs. Most of this rainfall was ineffective because it fell in small quantities and the rate of evaporation was high. Eighteen different vegetable crops were planted in August and "irrigated in." Six irrigations of from 1½ to 2 inches of water each were made during the three month period. Many of the crops such as turnip greens, mustard, southern peas and beans and some other short-season crops were harvested after four irrigations were made at 10-day to 2-week intervals.

Excellent yields were harvested from each crop, which would have been highly profitable to a vegetable grower that season, since fresh vegetables were scarce and in great demand. No production would have been possible without irrigation.

*Superintendent and Horticulturist, Truck Crops Branch Experiment Station, Crystal Springs, Miss.

Works Wonders With Vegetables

Irrigation can be used to "size up" peaches when they are maturing during a drought.

Bean Irrigation Paid $268/Acre

Experiments were set up to determine the dollar value of irrigation during seasons when only one or two irrigations were needed to bridge the "moisture gap." During one season, bush snap beans were given only two 2-inch irrigations to supplement the rainfall. They responded to the tune of $268 per acre over and above non-irrigated beans after cost of irrigation was deducted. Two irrigations on sweet corn during the same period increased the net income from one acre by $125 over the non-irrigated sweet corn. Irrigated sweet corn produced longer, higher quality ears with a fresher green appearance.

Watering Prevents Stunted Plants

One irrigation on tomatoes during a two week dry period when the fruit was reaching maturity increased the yield by 3300 lbs. per acre. This resulted in a net increase in income of $157.50 per acre over the non-irrigated tomatoes. Sweet potatoes also gave good response to irrigation. They received one 2-inch watering during a dry period when the plants had vines 10 to 12 inches long. The irrigated plots produced 8078 lbs. greater total yield than the non-irrigated plots.

This one application of two inches of water was enough to provide continuous growth of the plants. On the other hand, non-irrigated plants were stunted and failed to make satisfactory recovery from the dry period. The result was a drastic reduction of yield.

Insurance that Pays Off

The type of irrigation system must be adapted to the local farm situation as to soil type, topography, etc. But experience at the Truck Crops Station indicates that the furrow-flood method is most satisfactory with tomatoes when the fruit is maturing. For other crops, sprinkling seems to be equally effective.

Farmers buy many types of insurance and hope they never have to collect, but irrigation is one insurance that pays off every time a dry spell occurs. □ □

Type of irrigation system must be adapted to local farm conditions. This pond on Carlton Rutledge farm near Crystal Springs, Miss., is located so that field below it can be irrigated by gravity flow.

Costly hand labor in tobacco barning process is reduced sharply with bulk curing. Handled in bulk, tobacco leaves are placed evenly in form, clamped between two sides of rack. One man loads equivalent of 12 sticks in less than 5 minutes.

Bulk Curing of

By ALBERT MORRIS

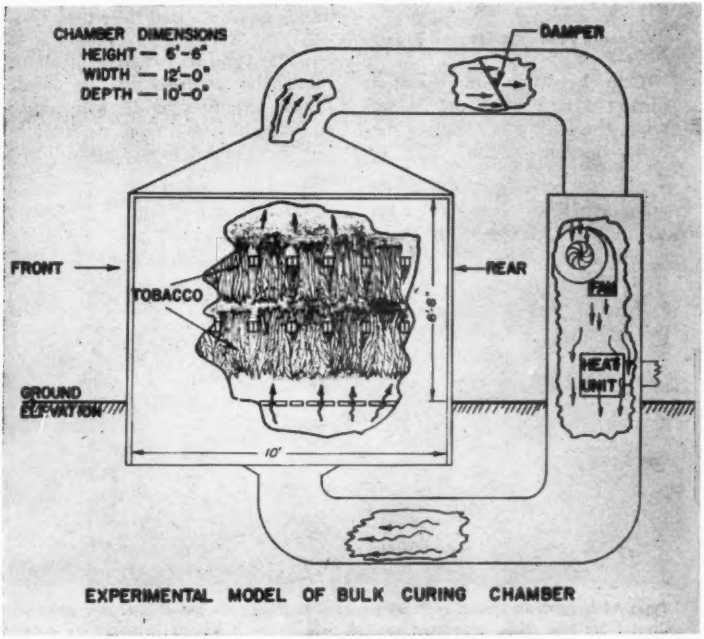
Scientists at North Carolina State College, in cooperation with the USDA, are ready for on-the-farm testing of a new bulk-curing process for tobacco. They estimate it will eliminate up to three-fourths of the labor now needed for barning after the leaves have been cropped, and it will save still more labor when racks are being unloaded for market.

The product of years of curing research, the new bulk process hits hard at the prime cost factor in tobacco production. About 420 man-hours per acre are necessary for growing this crop with present-day methods. Bulk curing combined with mechanical harvesting may practically eliminate hand labor in these two operations.

More Efficient Curing Barn

Pilot studies by the scientists —W. H. Johnson, W. H. Henson Jr., F. J. Hassler and Rupert W. Watkins*—also indicate that the bulk process will produce a more uniform leaf because there is closer control of curing and drying conditions. And the compact bulk-curing chamber, well-insulated and equipped with automatic controls, is expected to use fuel more efficiently than conventional barns.

The experimental bulk-curing chamber is 10 x 12 x 6½ feet. It will hold as much tobacco as a



Cross-section diagram of experimental model of bulk curing chamber.

EXPERIMENTAL MODEL OF BULK CURING CHAMBER

conventional barn six times larger. It consists of a curing compartment, a thermostat-controlled heating unit, and a dampered duct for regulating the amount of air to be recirculated.

In the curing chamber, the tobacco is held on 28 racks, each one 6 feet long and 16 inches wide. Leaves are loaded into these racks by the hand- or armful. One man can load what amounts to 12 sticks of tobacco into a rack in less than 5 minutes.

Forced Air Movement Is Essential

Forced air movement is essential in this bulk process. Temperatures are almost the same as for conventional curing. Hot air is forced up through the compartment floor and the tobacco at rates from 15 to 30 feet per minute. It promotes drying and prevents "scalding" of the tightly packed leaves.

Price Comparison Is Favorable

Indications are that the tobacco industry will accept the bulk-cured product. Chemical and smoking evaluations have been made, and these show little difference between tobacco cured conventionally and that cured by the new bulk process. Sales results also indicate that tobacco cured by this method will be acceptable to the trade. Sold on the open market, samples of the bulk-cured leaf averaged $62 per CWT, with a high of $70.

Other Uses for Curing Barn

While the bulk curing process will require a special barn, the cost of the barn will vary, depending on its size and whether its design permits use for other purposes. The barn can be sized to fit a tobacco allotment and perhaps designed for the curing and drying of other farm crops such as sweet potatoes, peanuts and grain. □ □

*Working under the auspices of the North Carolina Agricultural Experiment Station and the Farm Electrification Research Branch, Agricultural Research Service, USDA.

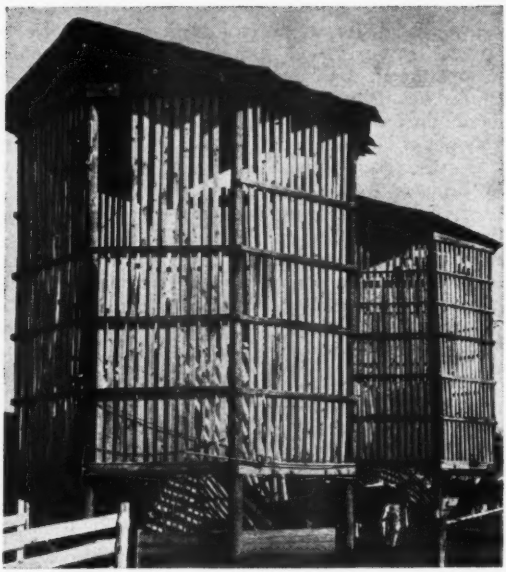
Tobacco May Be Just Around the Corner

New process cuts labor costs sharply

Tobacco-loaded frames are easily lifted onto barn tiers by two men. Experimental curing chamber holds 28 racks. Cured in bulk, tobacco requires 1/6 the space needed in a conventional barn.

'HAYKEEPER'

an economical way to dry, store and self-feed



Home-made haykeepers are built of used lumber and covered with metal roofs. Hay is dried, stored and fed, all in same unit.

A new device for storing, artificial curing and self-feeding hay crops is well-liked by two Rustburg, Virginia dairymen who are among the first in the Southeast to use it.

Called a "self-feeding haykeeper," the device was originated by agricultural engineers at Iowa State University. Its chief advantages are that it is economical to build and it eliminates virtually all of the labor in feeding. Artificial curing to get top quality is achieved without any extra handling.

Adrian and Teunis Droog used two of the haykeepers in 1959 and expect to build another this year. Their units hold up to 50 tons each. Initial cost was about $500 apiece, excluding the crop drier. They kept the cost low by using their own labor, buying rough lumber for the siding and salvaging tin for the cover. Biggest expense items were the eight pressure-treated poles set into the ground to form the basic frame for a haykeeper.

Last year was the first time the Droogs had cured hay artificially and they were pleased with the results. "When we began feeding it," declares Adrian, "our daily production jumped 100 lbs. within two days. When the cured hay was used up and we had to go back to the field-cured bales, production dropped off just as quickly."

Chopped hay is put into the self-feeding keepers while the moisture content is between 30 and 40%. This avoids shattering and loss of leaves that have high nutritional value. The Droogs use a 45-ft. portable elevator with 1½ hp electric motor to lift chopped hay into the keepers.

Inside dimension of the keepers is 22 feet at the bottom and 20 feet at the top. This taper relieves pressure on the walls and makes the hay feed down better. A duct-former with four large fins is drawn up through the hay as the keeper is filled, leaving an opening into which air is forced for drying. The fins also help distribute the hay, and the duct-former serves as a stopper to close the duct when drying is in progress.

Start Drying with Heated Air

The Droogs have a fuel-fired drier with 5 hp fan. Adrian says they used heated air for the first day or two after putting in green hay, and then changed to natural air until drying was finished. Hay on the outside is the last to dry.

A cone in the bottom directs the hay outward to the cattle when feeding is started. Gates are lifted to let cows get to the hay. There is surprisingly little waste. On two or three occasions with one of the keepers, the Droogs found their hay did not feed down readily and had to be started by hand. But they considered this a very minor thing.

Their haykeepers are located next to the dairy parlor and barn, on a concrete slab that covers the entire holding area. This assures good drainage. □□

Self-feeding aspect of haymakers is shown here. Cow eats by poking head through iron railings at base of unit. This haymaker is almost empty.

Where's the pump?

You can't see it—you can't hear it

You hardly know there is a pump—yet water is as plentiful as in the city! The reason: a Goulds *submersible* water system.

A Goulds submersible runs *silent*, runs *deep* in the well. You can use it 24 hours a day without stopping, because motors are rated for safe continuous operation. You can get water at rates up to 77 gallons per minute—the pump size depending on the needs of your farm.

How much is "enough" water? Here's a hint: a single milk cow on your farm needs up to 25 gallons per day to be truly productive. Milk cows that do get all the water they want produce from 10 to 22 per cent more!

It's the same story with other livestock. To find out how much water you need on your farm, get in touch with a Goulds dealer, talk it over.

Cost a small fortune? Nope! You can get a Goulds submersible water system for as little as $175. And you don't have to pay for it all at once—your Goulds dealer can arrange easy payment terms!

Get in touch with your nearest Goulds dealer soon. To get his name and more information, send coupon for free booklet.

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Send me my free copy of your new GUIDE TO WATER SYSTEMS and name of my nearby EASY TERMS Goulds Water Systems dealer.

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County.....Route.....

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EFFECTIVE SEPTEMBER 1, 1960

3-A Sanitary Standards for Bulk Tanks Are Revised

The following condensation is made from *3-A Sanitary Standards for Farm Milk Cooling and Holding Tanks-Revised* which becomes effective September 1, 1960 and supersedes *3-A Sanitary Standards for Farm Holding and/or Cooling Tanks* published in July-August, 1953 "Journal of Milk and Food Technology." The standards are formulated by the 3-A group which consists of representation from International Association of Milk and Food Sanitarians, U. S. Public Health Service, and The Dairy Industry Committee.

The standards cover tank requirements in material, fabrication, and cooling. There are some modified requirements in cooling that should be especially noted, particularly if you are presently considering an investment in a bulk milk cooler.

Here are the significant points of these new cooling standards:

Tanks shall be capable of cooling milk as follows:

First Milking:

(a) A tank designed for every day pickup shall cool 50% of the rated volume of the tank containing raw milk, from 90° F. to 50° F. within one hour after the tank has been filled to 50% of its rated capacity, with cooling system in operation during the filling period. The cooling system shall then cool above volume of raw milk from 50° F. to 40° F. within the next hour.

(b) A tank designed for every-other-day pickup shall cool 25% of the rated volume of the tank containing raw milk from 90° F. to 50° F. within one hour after the tank has been filled to 25% of its rated capacity, with cooling system in operation during the filling period. The cooling system shall then cool above volume of raw milk from 50° F. to 40° F. within the next hour.

Second or Subsequent Milkings:

The cooling systems of tanks, whether designed for every day or for every-other-day pickup, shall be capable of preventing the blend temperature of the milk in the tank from rising above 50° F. at any time during the addition of the second or subsequent milkings.

These cooling capabilities shall be determined by the test procedure outlined in detail in the complete report.

Cooling System:

(a) When the condensing unit is an integral part of the tank it shall have sufficient capacity to supply refrigeration required to meet above provisions.

(b) When the condensing unit is not an integral part of the tank, the tank shall have clearly and permanently indicated thereon information indicating size of condensing unit required to meet above provisions.

(c) The tank shall be clearly and permanently identified as to whether it is designed for every day or every-other-day pickup.

Each tank shall be factory-equipped with an indicating thermometer which is accurate to plus or minus 2 degrees F. at 50° F. It shall register temperature of the milk when the tank contains no more than 20% of its calibrated capacity.

The above specifications were extracted from the complete report entitled *3-A Sanitary Standards for Farm Milk Cooling and Holding Tanks-Revised.* For copies of the complete report, contact 3-A Sanitary Standards Committees, Office of the Secretary, 1145-19th Street, N. W., Washington 6, D. C.

PUMP TOO SMALL?
If it is—
you Pay too Much for Water
An inadequate water system on the farm will cut milk and egg production and slow the "fattening-up" time for cattle and hogs. These profit cutters, combined with the danger of fire and the annoyance of a water system pump that's too small, make it a very expensive piece of farm equipment—*can you afford one?* There's a Red Jacket "Submerga" or Jet Pump that can give you the water capacity at the pressure you need. See your Red Jacket Dealer today—*he can engineer a water system you can afford.*
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WS-40

RESEARCH NOTES

By J. P. SCHAENZER

One year's trial of foggers for cooling heavy-breed layers when temperature was over 85° resulted in 16% more eggs and fewer deaths than without cooling.—*Univ. of Georgia and USDA, Liston Drury*

Irrigating seed cotton by 10 a.m. on the day it wilts increased the average yield 554 lbs. per acre for 4 years.—*South Carolina College of Agriculture*

During the summer, furnish for each sow and litter a minimum of 200 cfm of air or 15 air changes per hour, whichever is greater.—*Kansas State College*

Man-hours of farm labor decreased at an average annual rate of 4% during the last decade, but output increased nearly 2¼% yearly.—*USDA*

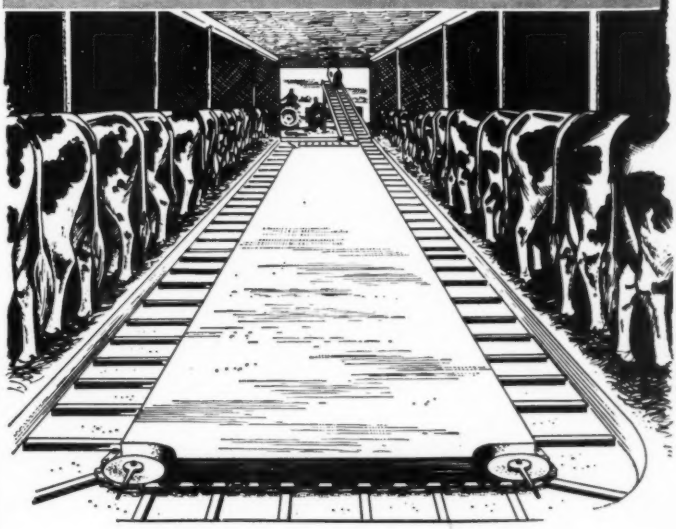
Sixteen out of every 100 farmers own their own feed grinding equipment; 10 have it ground by a truck mounted mill; and 74 go to a commercial mill.—*Univ. of Wisconsin, O. I. Berg*

Ten popular fresh vegetables dropped in total consumption from 51 to 40 lbs. per person during the past 20 years, while frozen and canned vegetables increased from 53 to 88 lbs. of fresh equivalent.—*USDA, AMS*

Fuel and electricity costs averaged $3 per ton for drying 40% moisture hay on wagons loaded either with short, random-packed bales or 30-inch bales stacked in 4 layers.—*Univ. of Pennsylvania, M. E. Schroeder and W. L. Kjelgaard*

Popcorn can be popped and peanuts roasted at home in a rotating cylinder that fits into an electric rotisserie.—*USDA, AMS*

A Real Back Saver!



. . . and *time*-saver, too.

Just push a button and your CLAY Barn Cleaner goes to work. In a few minutes the day's accumulation of manure . . . liquid and all . . . is loaded in your spreader.

This Is The Modern Way . . . easy, efficient . . . economical . . . and it frees you to spend your time on other more pleasant and more profitable jobs.

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- **1¾" cold-rolled corner pins anchored by channel iron.**
- **Sturdy CLAY corner wheel has 7 full-depth cast iron ribs and 2 bronze bushings with lubricating grooves.**
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☐ Barn Cleaners ☐ Crop Driers
☐ Silo Unloaders ☐ Mechanical Feeders
☐ Milking Parlors ☐ Clay Purchase Plan

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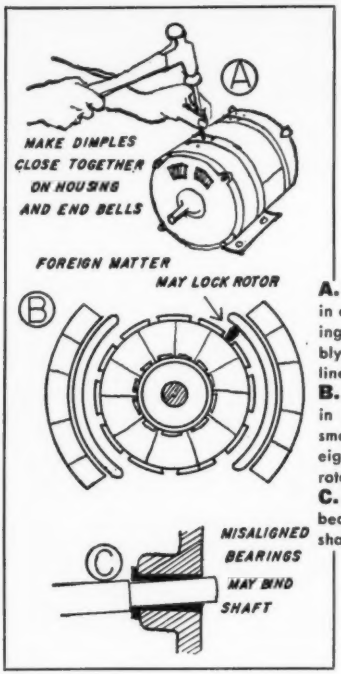
Final part of a 'total coverage' series on . . .

FARM ELECTRIC MOTORS

Repair and Maintenance

By ART RADWIN and ALBERT MORRIS, JR.



A. Dimples punched in end bells and housing before disassembly assure correct lineup later.

B. Common trouble in jammed motor is small chunk of foreign matter between rotor and stator.

C. Misaligned sleeve bearings can bind shaft or burn out.

Hand test to see if motor is overheating. If motor is too hot to touch for a few seconds, it is overheating.

DIAGNOSIS AND DOCTORING OF ELECTRIC MOTORS

FIRST SYMPTOM	SECOND SYMPTOM	POSSIBLE CAUSE	RX
Excessive hum	Scraping noise	Uneven air gap developing into rotor rubbing against stator	Measure with feeler gauge—replace bearings if necessary
		Unbalanced rotor	Check on parallel bars; balance with solder if necessary
Regular clicking	Jammed rotor; motor hums but won't start	Foreign matter in air gap between rotor and stator	Remove matter and check for damage
Clicking and arcing	Motor loses power, stops	Worn brushes and/or commutator	Repair or replace
Rapid knocking	Motor hums, no start	Jammed or overheated bearing; misaligned bearing or shaft	Realign bearing and shaft until knocking disappears—check for damage to bearing and shaft.
Brush chatter and/or motor vibration	———	Worn or misaligned bearing and/or shaft	Realign or replace bearing and shaft
		Vibration in driven machine	Eliminate vibration in machine or use flexible belt drive
Motor overheating	Blown thermal overload or burned-out motor	Motor overloaded	Measure load with ammeter—compare with nameplate—check for excessive friction—reduce load or use larger motor.
		Dirty motor or clogged vents	Clean motor and vents
		Rotor rubbing, seizing stator	Replace bearings, check for damage
		Shorted stator windings	Take to motor repairman
		Bad ground	Check with test lamp or meter—correct
		Insufficient voltage	Check with voltmeter, correct by moving motor nearer branch circuit or having more wiring capacity installed
Bearing overheating	Blown thermal overload or burned-out motor	Misalignment	Realign bearing and shaft
		Excess belt tension	Release belt to correct tension
		Excess end thrust	Shaft should have some in-and-out play—reduce end thrust
		Sticking oil ring in bearing	Clean, repair or replace
		Insufficient lubricant	Add lubricant—check for damage to bearing
Motor won't start—no hum, no heat	———	Check wiring lead-ins, fusing, on-off switch, leads to brushes, commutator or windings	Repair or replace parts
Motor won't start, but hums and/or heats	Blown thermal overload or burned-out motor	Jammed rotor or bearings	Clean, align or replace—try turning shaft by hand to determine if rotor or shaft is jammed
		Insufficient voltage	Enlarge wiring, move motor nearer branch circuit
		Bad brushes, commutator or starting switch	Clean, repair or replace

IMPORTANT: SHUT CURRENT OFF IMMEDIATELY IF MOTOR HUMS BUT WON'T START TO AVOID SEVERE DAMAGE TO MOTOR

Compared to other types of farm power, electric motors need very little real maintenance to keep them running. If you take care of them in operation and protect them from harmful conditions (See part 6, April, 1960), major maintenance or repairs should be few and far between.

A regular thorough cleaning of the inside of the motor, involving taking the motor apart and cleaning each part individually, is probably the best preventive maintenance possible. If this is done regularly, say once a year, any developing trouble can be spotted and remedied before it causes a breakdown or stoppage. See chart below.

You don't have to be an expert to troubleshoot your electric motors should something go wrong. A step-by-step check of the symptoms will usually tell you what the trouble is, and if you have a little mechanical skill and a few basic tools around, you often can remedy it before the motor breaks down.

A word of caution. Don't start taking a motor apart unless you're sure you know what you're doing and will follow the thing through. It's a pretty poor feeling to have one little part left over. □ □

PROCEDURE FOR CLEANING ELECTRIC MOTOR

(Courtesy Agric. Engr. Dept., Ohio State Univ.)

1. Disconnect motor and remove from mounting.
2. Wipe all dirt from outer surface of motor.
3. Disconnect wires at motor, noting position on motor terminals.
4. Remove motor pulley—use gear puller or pair of "C" clamps.
5. Mark end bells with center punch—one mark on pulley end bell and two marks on opposite end bell; mark housing same way.
6. Use proper tools (box or socket wrench and screwdriver) to remove the bolts holding end bells.
7. Use a *soft-faced* (plastic, wood or lead) hammer and screwdriver to tap end bells loose.
8. First remove the end that does not contain the starting switch or brush ring—observe the position and number of shims as you remove the rotor.
9. Carefully remove the end containing the starting switch, as it is attached to stator by permanent wires.
10. Use very fine sandpaper or crocus cloth to clean points (also commutator, brushes in repulsion motor). *Do not use emery cloth.*
11. Clean all parts of motor—use special cleaning fluid such as perchlorethylene (available from petroleum bulk plants or dry cleaning supply jobbers) and *do not get liquid on wires.** Blow and wipe parts clean.
12. Make sure bearings are clean and wicking is in place.
13. Re-assemble in following order:
    a. End with switch or brushing—pack wires in place.
    b. Insert rotor—make sure shims are in place—a drop of oil should be placed on bearing part of the shaft. c. Replace other end bell.
14. Check position of end bells with center punch marks—oil well should be up and window in bearing not in line of pull.
15. Insert end bell bolts—use soft hammer to tap bells into place.
16. Turn shaft by hand—if it is tight, end bells may not be in proper alignment or the wicking may be between bearing and shaft. *Shaft must turn freely before energizing motor.*
17. Connect temporary leads and test motor. Then fasten permanent leads.

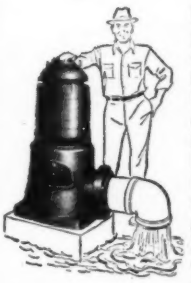
Caution

a. If you don't have a soft-faced hammer—use a block of wood and ball peen hammer. Do not force any part!
b. In case of ball bearing motors, press end bells into position or tap lightly with soft hammer.

***NOTE:** *If carbon tetrachloride is used, exercise extreme caution—its fumes are very toxic. Make sure work area is well-ventilated or outdoors. Avoid use around heat. Keep containers sealed.*

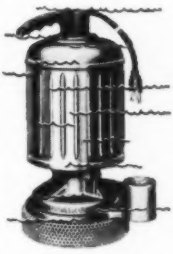
Reprints of complete 7-part series on Farm Electric Motors are available in 16-page booklet form. Individual copies—50¢ each. Quantity prices on request. Order from: Book Department Electricity on the Farm 466 Lexington Ave. New York 17, N.Y.

Pump Talk by Deming



Ever get tired of gambling on the weather? One fellow we know boosted his average corn yield from 45 to 75 bushels per acre through irrigation. He found a dependable DEMING deep well turbine pump ideal as the "heart" of the system, with cost of operation and upkeep both low.

When it *does* rain, sometimes it can be too much of a good thing, and just when your cellar pump is working the hardest, the lightning crackles again—and out goes the power. Rising water is bad enough, but if it gets into your pump motor—more expense. That's why you might consider the DEMING Submersible type. Safely sealed, it can be completely covered by water, but will start pumping away the minute you get power again.



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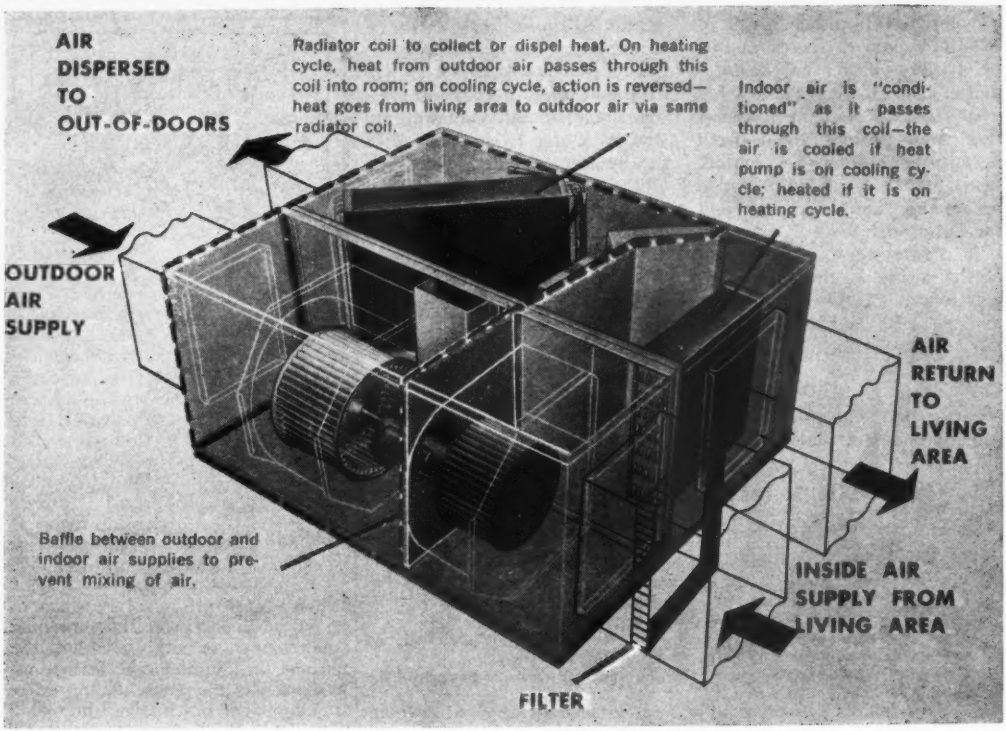
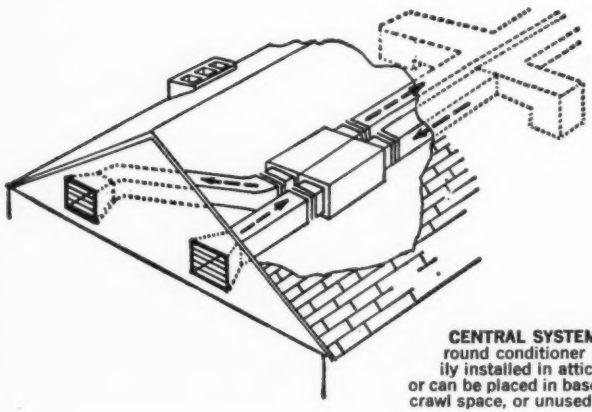

AIR DISPERSED TO OUT-OF-DOORS
Radiator coil to collect or dispel heat. On heating cycle, heat from outdoor air passes through this coil into room; on cooling cycle, action is reversed—heat goes from living area to outdoor air via same radiator coil.
Indoor air is "conditioned" as it passes through this coil—the air is cooled if heat pump is on cooling cycle; heated if it is on heating cycle.
OUTDOOR AIR SUPPLY
AIR RETURN TO LIVING AREA
Baffle between outdoor and indoor air supplies to prevent mixing of air.
INSIDE AIR SUPPLY FROM LIVING AREA
FILTER

Use HEAT PUMP to Provide

- Summer Air Conditioning
- Between-Season Heating



CENTRAL SYSTEM year-round conditioner is easily installed in attic space or can be placed in basement, crawl space, or unused room.

By HUGH J. HANSEN

We know many of you have a perfectly good heating system that you are not yet ready to discard in favor of other types of heating. We also know many of you are very interested in adding summer air conditioning to your home.

If you fit this category, you should investigate the possibility of using a heat pump to care for your needs. The centrally located heat pump (which is actually a year-round way of

conditioning air in your home) will provide summer air conditioning for your entire home during hot weather. The heat pump has the desirable added feature of being "reversible." This means that when temperatures drop, such as chilly spring or fall mornings, the unit automatically reverses itself and provides heat to maintain the predetermined indoor temperature you have selected. This is all done automatically with switching equipment that comes with the unit.

When cold weather comes to stay, about October 15 to November 1, and you know you will be using your heating system steadily, you can just shut off the heat pump until spring. Then it can again be turned on to care for either chilly or warm days and the furnace can be completely shut down until fall.

How Heat Pump Works

Heat pump operation is confusing to many people. Actually it is quite simple. Compare it to your household refrigerator. The refrigerator is a heat pump. It pumps heat from inside the food storage cabinet to the room air. The heat pump pumps heat from inside your home to the outdoors when it is on the cooling cycle. Now if we could visualize our refrigerator "reversing" itself, it would pump heat from the room air into the ice cube compartment. When the heat pump reverses into the heating cycle, it does what we are imagining our refrigerator to do. The heat pump extracts heat from outdoor air (even 0°F. air has some "natural" heat. Remember, high school physics tells us that any air with temperatures above —459° F. has some measurable heat in it) and pumps it into our homes. Now, the area that was cooled during hot days is warmed simply by the reversed operation of the heat pump. This reversal is done automatically by temperature-sensing thermostats and switches built into the unit.

With a central system reverse-cycle heat pump, all windows and doors are kept closed year-round. The heat pump filters the air every time it is recirculated through the room. Disposable germicidal type filters cost about $3 each. Each filter is good for several weeks depending on local conditions. In summer, on the cooling cycle, it removes excess humidity from the air to make living conditions more comfortable.

In winter, on the heating cycle, provisions can be incorporated to add humidity to overly dry air. The unit can even be used to filter air or remove excess moisture from the home during the winter when the regular furnace is doing the heating job. No heat is provided by the heat pump in this operation.

Cost of a central system reverse-cycle heat pump, including installation labor, should run in the vicinity of $1.00 to $1.50 per square foot of area in the average home. If your present heating system utilizes air ducts, the heat pump can be incorporated into these present ducts. If yours is a hot water or steam radiator system, it is easy to add the ducts as shown in the accompanying illustration. □ □

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Some farm bulk milk coolers can be as obsolete the day they are installed as your can cooler! Here are three, sure ways to tell an old-fashioned tank — so you won't get stuck with one:

(1) An old-fashioned tank, usually rectangular-shaped, requires water and ice to meet the cooling code, practically doubling your cooling expense. (2) When cleaning equipment is installed and used in an old-fashioned tank — the large, loose, awkward lids leak water all over your floor; and the corners are practically impossible to clean properly. (3) When you go pipeline with an old-fashioned tank — you have to shell out a lot of cash for an expensive, hard-to-clean releaser or pump.

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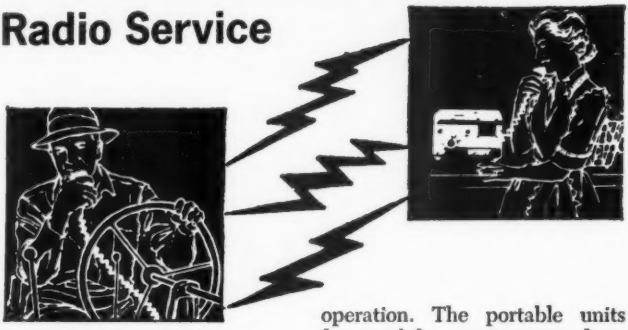
FLINT-WALLING

Kendallville, Indiana

Farm Use of Citizen's Band Radio Service



In September, 1958 the Federal Communications Commission assigned the 27 megacycle band for Class D Citizen's Radio Service. According to FCC regulations, this service may be employed for *private short distance radio communication for personal or business use.*

Farmers and ranchers are now using the Citizen's Band Service for radio-telephone communication between farm buildings and mobile equipment such as trucks, tractors, or combines. A reliable range of 5 to 10 miles can usually be expected.

FCC has assigned 23 channels between 26.965 and 27.255 megacycles for Class D Citizen's Radio Service. Class D service requires no operator's license or license examination. The radio equipment must, however, be licensed. This merely involves the completion of an FCC application form #505. The application describes the intended use of the equipment, certifies that it meets technical requirements, and indicates that the user is familiar with the rules. FCC issues call letters and grants authorization to establish a Class D station to U. S. citizens, 18 years of age or older.

There are presently about 50 manufacturers building the units. Most are *transceivers* which means the same unit is used for both transmitting and receiving. Power requirements run between about 30 to 60 watts on 115 volt operation. The portable units for mobile equipment draw about the same amount of current as automobile radios.

Costs of a single unit vary from about $40 for kits which you must assemble to over $200 for elaborate factory-built units. Two units, of course, are necessary for communication. The least expensive communication set, which includes two transceivers plus necessary antennas, costs around $100.

The FCC prohibits certain practices with Citizen's Band Radio. Rule violations may result in loss of license or even fines or imprisonment for more serious infractions. Here are some prohibited practices:

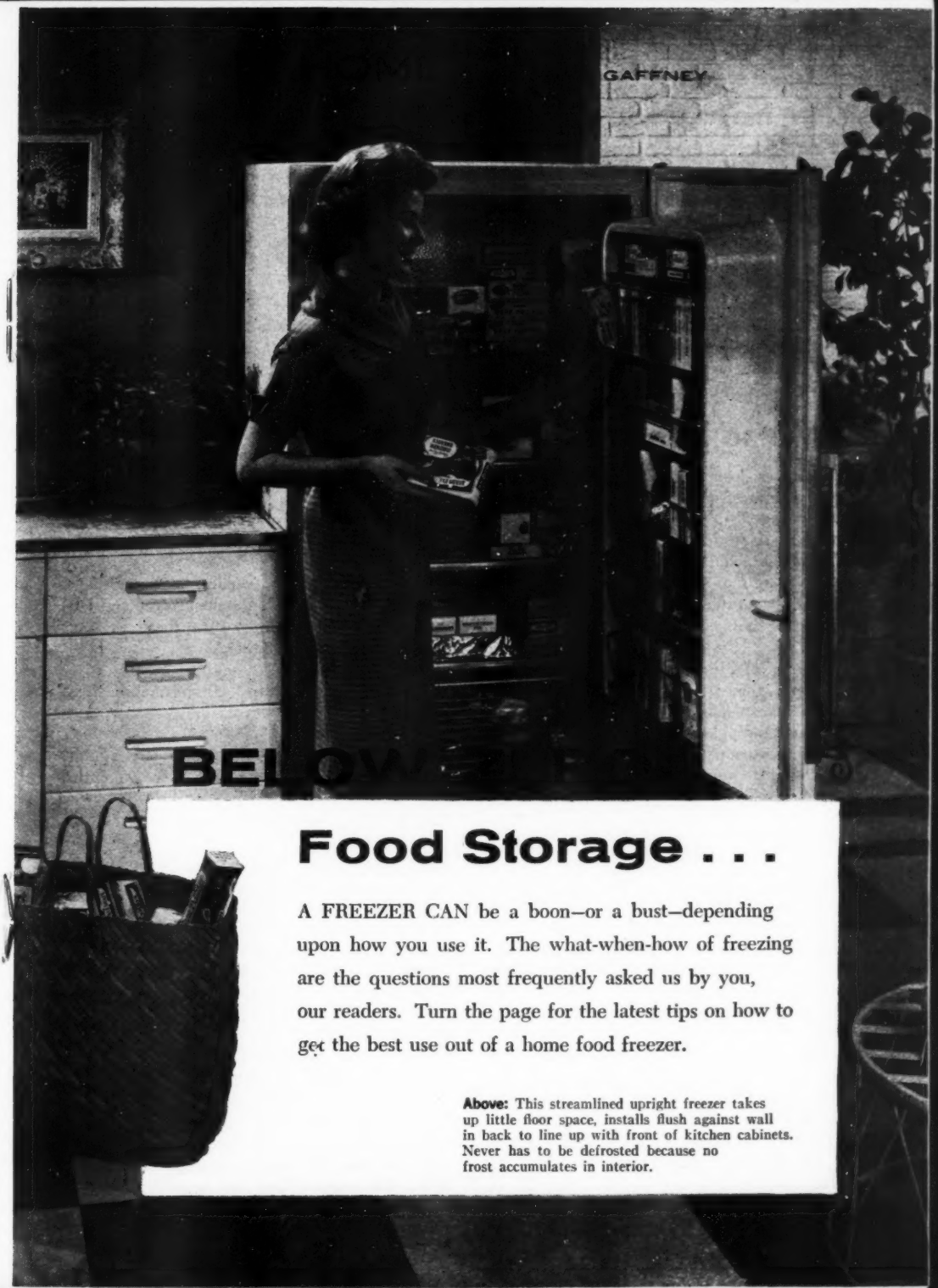
1. Citizen's Radio Service should not be used for purely recreational purposes or for just "talking on the radio." Communication must be voice only—no music or code signals.

2. The assigned 11-meter band is not a ham operator's band and must not be used as such. The calling of "CQ" in an attempt to contact unknown Citizen's Radio stations is not permitted.

3. Final amplifier plate input power to transmitter is limited to a maximum of 5 watts.

4. The antenna must not be more than 20 feet above the structure on which it is mounted.

It appears the Class D Radio Service may find a very definite farm use for intercom or monitoring uses. Sets are readily available at low cost. □ □



Food Storage . . .

A FREEZER CAN be a boon—or a bust—depending upon how you use it. The what-when-how of freezing are the questions most frequently asked us by you, our readers. Turn the page for the latest tips on how to get the best use out of a home food freezer.

Above: This streamlined upright freezer takes up little floor space, installs flush against wall in back to line up with front of kitchen cabinets. Never has to be defrosted because no frost accumulates in interior.

WHY freeze foods?

Some of us are inclined to develop a "squirrel" complex when we first buy a freezer. We drop into it every left-over tidbit (which we'll probably never use), or else we overstock on one type of food because the price was low. This is not only bad management but it is downright uneconomical. Think of your freezer as a convenience in meal preparation every single day and work out your own specific pattern for freezer living—tailored to your family's preferences and eating habits.

WHAT to freeze

This must be decided on the basis of family needs and desires, on freezer space and cost of freezer storage. It may be more economical, for instance, to store some fruits and vegetables in a vegetable cellar than to freeze them. But to you freezing may be worth the extra cost because of the convenience of having the products prepared so they can be readied quickly for serving.

Select only high-quality foods. Freezing does not improve food—it merely preserves quality and prevents spoilage. Because all fruits and vegetables rapidly lose their quality after harvest, two hours from garden to freezer is a good rule of thumb to adopt.

For fruits, especially those which darken readily, prepare only enough for 8 to 10 containers at one time.

Fruits: peaches, apples, cherries, berries of all types, melons, and cranberries are most popular. Some varieties freeze better than others. Write to your State extension service, experiment station or college of agriculture for information about the most satisfactory varieties in your area. Do not store for longer than 12 months.

Vegetables: nearly all vegetables freeze satisfactorily. Exceptions: green onions, radishes, tomatoes (except as juice, puree, or cooked), lettuce and other salad greens. Check varieties best for your section; also learn best types to grow for freezing. Storage period: 9 to 12 months.

Meats: beef, pork, lamb, should be aged before freezing (pork and veal, 1 to 2 days; beef and lamb, 5 to 7 days). Chill at 33° to 39° F. during aging. Sausage and ground meat should not be stored for longer than 1 to 3 months. To enhance flavor of less tender cuts, use meat tenderizer either before freezing or during thawing period.

Poultry: chickens, ducks, turkeys and geese may be frozen as whole birds, halves or in serving pieces. Serving pieces are often most convenient to use and take up least space in freezer. Giblets should not be stored longer than 3 months, chickens and other poultry for 6 months to a year. Poultry is more tender if aged at least 12 hours before it is frozen, and before being cut into pieces.

Dairy products: ice cream, sherbets, butter, sweet cream and eggs. Store for short period.

Baked goods: cakes, cookies, pies, puddings, bread, rolls, baked beans, soups, stews, and left-over meats and poultry. Plan these as short storage items (1-3 months).

Fish: shell fish, fresh and salt water fish. Store 3 to 6 months.

Game: Birds, rabbits, and other large game. Wrap carefully and use within 6 to 9 months.

WHEN to freeze

While much of the food you put in your freezer is of a seasonal nature, you also will be adding items all year round. The most important rule for "when" is: *at peak of freshness.* Do not waste valuable space on old, tired vegetables that will come out of the freezer the same way. Choose only sweet, just-ripened fruits—young, tender vegetables—well-trimmed and properly aged meats and poultry.

Packages should be placed in freezer immediately. If possible, avoid putting too much unfrozen food in at one time—approximately 3 pounds per cubic foot of freezer capacity is recommended. If you overload freezer, temperature will rise and foods will freeze too slowly. When this happens they lose quality, may spoil.

HOW to freeze

How well a sportsman follows the rules and plays his game determines his score. It is the same with freezing foods; you must follow the rules and do the job well in order to get good results. Here are the rules:

(1) Be sure your freezer maintains a temperature of 0° F. or less at all times. Fluctuating temperatures—particularly above zero—will quickly lower quality of food and, in some cases, may prove dangerous. If you have any doubt about temperature in your freezer, a thermometer placed in the freezer will give you the answer.

(2) Be sure that everything you put into your freezer has been handled under high standards of cleanliness. Utensils, cutting tools and freezer containers must be completely soil-free. This is an important rule of health, of course, but it is particularly important in processing foods for freezing.

(3) Use only good quality wrappings recommended for the freezer. Moisture must stay in, air must stay out. Wrapper or container must be moisture-vapor-proof. Force as much air out as possible and seal tightly. Never use waxed paper, bread paper, paper bags, or regular cellophane because they are *not* moisture-vapor-proof. Use freezer tape to seal packages.

(4) Label all packages with contents, weight (if required), and date it was stored or latest date it should be used. Do not hold food longer than the recommended period.

(5) Place packages next to refrigerated surface. Check instruction booklet furnished with your freezer to find out proper load for your freezer and where food should be placed for quick freezing. If possible, leave a little space between packages for air circulation. Freezing should be completed within 24 hours or less.

TIPS . . .

● Freeze brown sugar and confectioner's sugar to prevent lumping. If you have brown sugar that has become hard and unusable, freezing will restore it to its original condition.

● Mushrooms, either wild or bought locally at a mushroom farm, retain their freshness with freezing. Trim stems, brush to remove grit (if unusually soiled or bruised, wash under running water—we prefer to peel them). Saute lightly in butter or margarine. Leave whole if small, slice if large. Freeze quickly in small plastic containers, filling about three-quarters full. Do not blanch mushrooms because it makes them rubbery and tasteless.

● *Fresh idea: instead of labeling packages with date they were placed in freezer, mark them with date they should be removed. Check occasionally to find the foods which should be used soon and place them in most accessible spot.*

● Casseroles and other main dishes should be stored slightly undercooked. Cool quickly by setting container, uncovered, on ice or in ice water. This stops the cooking and helps retain natural flavor, color and texture. Quick cooling also retards growth of bacteria that could cause spoilage.

● Use colored tape, aluminum foil, or colored containers as an aid to quick identification. Example: red for meats, blue for fruits, green for vegetables.

● *Two plastic bags of bread crumbs, one plain and one buttered, often will hasten preparation of main dish for dinner. Uses up odds and ends of stale bread, too.*

● Quick trick for fruit pies: mix fruit according to method used for fresh pies, fill foil pie tins and freeze. When solid frozen, stack two together and place in plastic bags or wrap in aluminum foil. When ready to use, unmold frozen filling as you would a gelatin, place in thawed pie crust and bake.

● *Economy note: if you have more pancake batter than requests for pancakes, cook all of it but freeze the ones that are left. Reheat in moderate oven; serve with powdered sugar or a fruit sauce for dessert. Or spread with a soft cheese or meat filling; cream sauce or brown gravy are a good accompaniment.*

● To protect edges of pie crust or soft topping on pies you plan to freeze, cut a cardboard strip one-half inch deeper than pie. Tape together around pie, then wrap as usual.

● When you're cutting corn off the cob for freezing, try standing the ear in the center hole of a stem cake pan. It's easy to hold the corn steady and deep pan catches all the corn.

● *Sandwiches left over? Keep them in the freezer until the day you need a quick snack. Brush with butter and bake on sandwich grill. Delicious!*

● Be sure you have a complete "reference library" of good methods for freezing and preparing frozen foods. More has been published on this subject than almost any other phase of cooking and food preservation. If you write to us, we'll be glad to send you a list of recent publications and where they may be obtained.

Once you've started on these sesame delectables you can't stop. Serve with refreshing root beer float.

Savory Sesame Seed

WHAT IS probably the oldest seed known to man—sesame—is now an American product, grown in our big state of Texas. We are rapidly learning its nutritive value as well as the delicious, nut-like flavor it imparts to everyday dishes. Perhaps you are more familiar with sesame seeds on pastries; try these new uses—we guarantee you'll be pleased!

Sesame Fried Chicken

1 chicken, cut up
1 egg, beaten
½ cup milk
1 cup flour
1 teaspoon baking powder
2 teaspoons salt
2 teaspoons paprika
¼ teaspoon pepper
2 tablespoons sesame seeds
¼ lb. butter or margarine

Preheat oven to 400° F. Melt butter in shallow pan in oven. Combine egg and milk in mixing bowl; mix together flour, baking powder, salt, paprika, pepper and sesame seeds. Dip chicken pieces, first into egg-milk mixture, then into flour mixture to coat. Place in pre-heated pan, turning to coat with butter. Bake, skin side down in a single layer, for 30 minutes; turn, bake 30 minutes more.

Sesame seeds go to parties in the form of Sesame Chips. These chips are good by themselves, or with tasty dips. Try this one:

Combine until smooth 1 cup sour cream, 4 ozs. blue cheese; stir in 2 tblsp. chopped chives, ¼ cup chopped parsley and ½ cucumber, finely diced. Season to taste with tabasco sauce or small pinch cayenne pepper.

This bite-size tidbit will have guests asking for more:

Sesame Turnovers

Mix 1 cup flour and ¼ tsp. salt. Cut in ⅓ cup shortening; add ½ cup crushed sesame chips. Add about 3 tblsp. cold water, or enough to form dough into a ball. Roll out very thinly and cut into 2-inch squares. Place thin cube cheddar cheese in one corner of square, fold pastry over into a triangle and seal edges with tines of a fork. Prick top of pastry, bake in oven (350° F.) 15 to 20 minutes. Makes 2 dozen small turnovers.

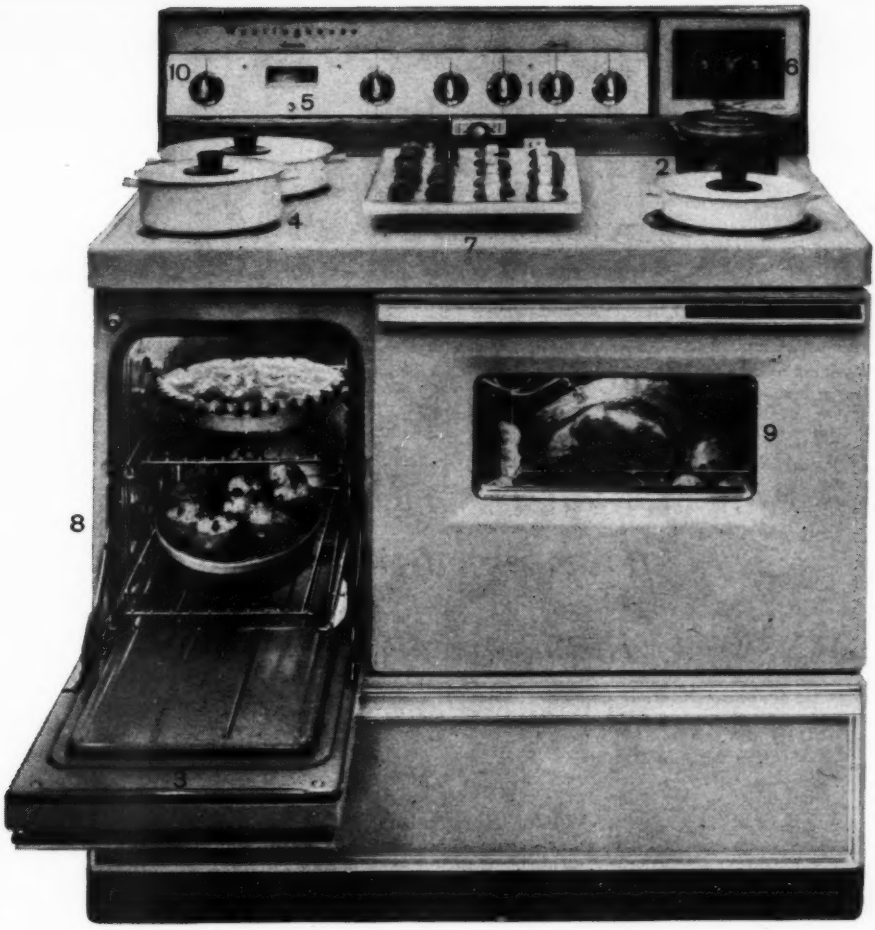
Sesame Bread

3 cups sifted flour
1 teaspoon salt
3½ teaspoons baking powder
½ cup toasted sesame seeds
¾ cup sugar
¼ cup shortening
2 eggs
1 teaspoon grated lemon rind
1½ cups milk
1 tablespoon untoasted sesame seeds

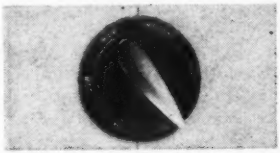
Sift flour, salt and baking powder; mix in toasted sesame seeds. Beat together sugar, shortening and eggs. Blend in lemon rind and milk. Add all at once to flour mixture. Mix only until ingredients are blended (about 30 strokes), using the cut-and-fold method of mixing. Stop at the end of the fifteenth stroke to scrape down bowl and spoon with a rubber spatula.

Turn into a well-greased, lightly floured pan (9 x 5 x 3-inches). Sprinkle untoasted sesame seeds over top. Bake 70 minutes in 350° F. oven. Cool. Serve with sweet butter or cream cheese.

To toast sesame seeds, spread them in a shallow pan and bake in 350° F. oven 10 to 12 minutes. Brush hot, baked breads of all kinds with unbeaten egg white, then sprinkle with toasted seeds.



1960 WESTINGHOUSE ELECTRIC RANGE...SIMPLEST TO COOK ON, EASIEST TO CLEAN



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2. Safety-Matic Unit makes every utensil (even glass) automatic.

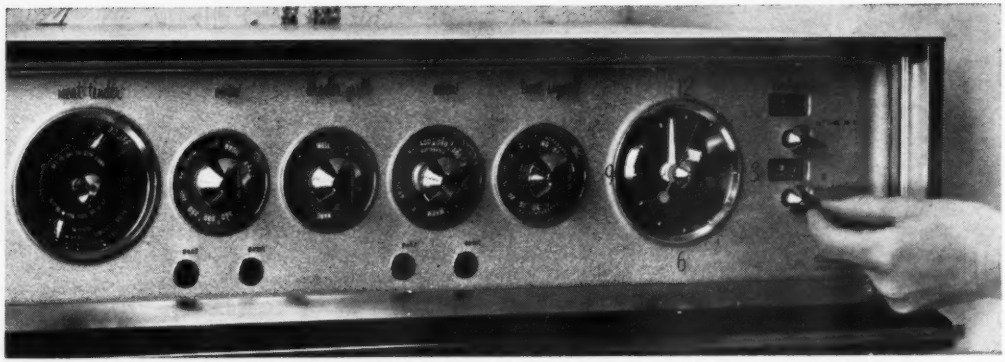
3. Lift-Off Oven Doors make ovens easier to get at when you clean.

4. Surface Units plug out for easy cleaning—so do oven heaters.

5. Exclusive Roast Guard keeps roasts from drying out, overcooking. **6.** Timing Center makes Master Oven, outlets automatic. **7.** Automatic Grill has own control; cooking guide. **8.** Thrift Oven for simple meals. **9.** Master Oven holds largest roasts, poultry. Both ovens are Miracle Sealed—roast, bake, or broil evenly, perfectly. **10.** Single Dial Controls make ovens simple to use. Choose from Confection Colors: Mint aqua, lemon yellow, frosting pink, sugar white. See your Westinghouse Dealer.

YOU CAN BE SURE...IF IT'S **Westinghouse**

Watch Westinghouse Lucille Ball-Desi Arnaz Shows—CBS-TV alternate Fridays



Lower knob set to number of hours food is to cook; upper knob set at hour it is to stop cooking. Oven control set at temperature for cooking. That's it—nothing more for you to do! So easy a child could do it.

RIDDLE: *What is something you've paid for but never use?*

ANSWER: *Automatic oven control on your electric range!*

WHEN YOU BOUGHT your electric range were you told about all the wonderful *automatic* features it contained? If you are like a great many homemakers we know, you promptly forgot about using many of these features once the range was in the kitchen.

This is especially true of the automatic oven control and there was a good reason for it. We say "was" because some of the clock controls on older ranges were very complicated to operate and many homemakers rejected them for this reason. Automatic oven controls on new ranges have been simplified to the degree that how-to-set-them is no longer a problem.

There's an additional reason why this automatic feature remained dormant in the kitchen. An oven meal with all dishes that cook for the same length of time and at the same temperature require advance planning and sometimes this is not easy.

Advantages of using the oven control are many. Most obvious one, of course, is that you can put food in the oven, set the control, and the meal will start and stop cooking at the time you have chosen. If you have to be in town at a meeting all morning and you want lunch at one o'clock, it will be ready to serve as soon as you return if you use the automatic oven control. If you have qualms about this, try a meal one day while you're at home—you'll have more confidence when you see what happens.

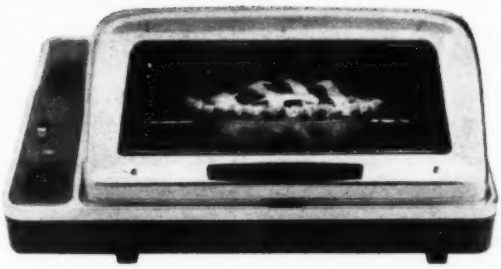
A good time to do this is when you are making a new dress and do not want to stop for noonday meal preparation. Put the meal in the oven right after breakfast, set the control, and your cook-in-the-kitchen will have everything ready at the regular time.

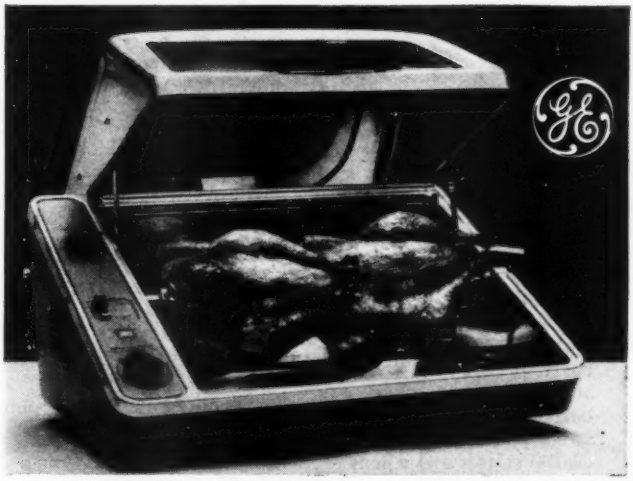
Some hints in planning may be helpful. For instance, in selecting oven meals to cook automatically, use foods that will not deteriorate by standing in the oven before cooking starts. This means cured or smoked meats, or frozen roasts and chops instead of fresh meats; avoid vegetables and desserts prepared with milk and eggs.

A frozen 4-pound roast requires 5 or 6 hours for thawing. If time interval between placing roast in oven and time automatic clock turns oven on is not sufficient for complete thawing, 5 to 10 minutes per pound should be added to cooking time.

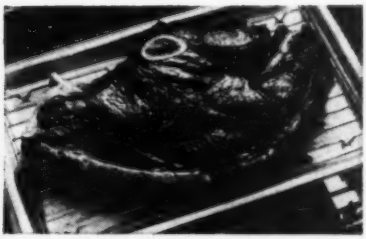
(Please turn to page 26)

five good reasons for owning a General Electric Rotisserie-Oven (*even if you have a good range oven*)





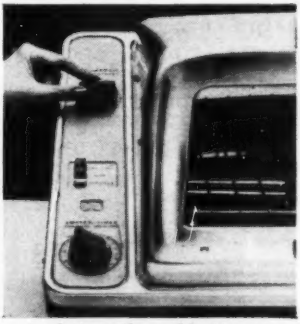
1 **It's a rotisserie . . . infra-red broiler . . . precision oven!** No ordinary rotisserie. Does as many things as an expensive range-oven—and has range-oven accuracy. Actually modernizes your kitchen. Big size, too—rotisserizes a 16-pound turkey. Meat bastes itself for extra-juicy, tender eating. Unique Tilt-Top lid lifts up for easy access to food.



2 **Infra-red broiling** seals in the natural juices for best ever steaks and chops—brown and crusty outside, delectable inside. Top Calrod® heating element swings down for easy cleaning.

3 **Bake all summer without heating up** kitchen! Extra heating unit, thermostatic control assure perfect results. Tilt-Top closes for baking, glass window lets you peek in.

General Electric Co., Portable Appliance Dept., Bridgeport 2, Connecticut.



4 **Automatic pushbutton controls,** like expensive new ovens. Buzzer signals "time up" —heat shuts off automatically so you can't overcook. No watching!

5 **It's portable**—cooks anywhere. This handsome General Electric Rotisserie-Oven is aluminum with copper color trim. Gives you luxury features —at low cost! Cooks indoors, outdoors —on regular house current.

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3 ANSWERS to PROBLEM WATER in ONE

DIAMOND 3T UNIT

You can *Filter, Soften* and *Remove Iron* from your water supply with this new and revolutionary Diamond 3T Unit. Completely *automatic*; periodic replenishing of salt is all that is required. Guaranteed by one of the oldest manufacturers of water conditioning equipment. Write

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Oshkosh, Wisconsin

DRAINS cellars, cisterns, wash tubs; **IRRIGATES - CIRCULATES - SPRAYS** $7.95

1,001 uses. Stainless shaft. Won't rust or clog! Use 1/6 HP motor or larger — ¾ HP for up to 2,400 GPH; 430 GPH 80' high; or 1800 GPH from 25' well. 1" inlet; ¾" outlet. Coupling included free. **$7.95**
Heavy Duty Ball-Bearing Pump
Up to 5,200 GPH; or 3000 GPH from 25' well. 1¼" inlet; 1" outlet. **$12.95**
Postpaid if cash with order. MONEY BACK GUARANTEE.
LABAWCO PUMPS, Belle Mead 49, New Jersey

Have a Heart!
Support Your
Local
Community Chest
Organization

AUTOMATIC OVEN CONTROL . . . cont'd.

SUGGESTIONS for planning oven meal combinations, all of which may be cooked at 350° F. for 1 to 1½ hours:

Main dishes:
Meat loaf
Hungarian Goulash
Stuffed spareribs
Stuffed pork chops
Ham loaf
Oven-Fried chicken
Flank steak
Veal birds
Swiss steak
Meat balls
Baked ham slice

Breads:
Fruit bread
Nut breads
Egg bread

Vegetables:
Harvard beets
Scalloped potatoes
Baked potatoes
Steamed carrots
Baked squash
Sweet potatoes
Glazed carrots and onions
Steamed green beans
Scalloped onions
Baked lima beans

Desserts:
Date or bread pudding
Baked apple
Cherry cobbler
Fruit compote
Raisin-nut pudding
Gingercake
Fig upside-down cake
Date-nut cake

Following recipes require 1 hour to cook at 350° F.:

Glazed Ham Slice: place center slice of ham, 1½ inches thick, in shallow baking dish. Glaze with combination of ¼ cup brown sugar, 1½ teaspoons dry mustard, 1 tablespoon cream. Bake uncovered.

Carrot Rings: combine in 1-quart casserole 3 cups sliced raw carrots, scraped, with ¼ cup grated onion, ¾ teaspoon salt, ⅛ teaspoon pepper, ½ cup melted butter. Cover and bake.

Apple Crunch: place 5 cups sliced apples, peeled and cored, into 1½-quart glass baking dish. Sprinkle with cinnamon, 1 tablespoon grated lemon peel, ¼ cup lemon juice. Mix together until smooth ½ cup brown sugar, ½ cup granulated sugar, ½ cup butter, 1 teaspoon salt and ½ cup sifted flour. Spread over apples, bake. Serve warm with thin cream, seasoned with cinnamon.

Most stylish 36" range ever made for YOUR kitchen

Monarch SINCE 1896

The answer to your need for a new cooking outlook — renewed confidence in your kitchen's appearance. Designed to speed your daily food preparation — automatically, economically. Glass lined "take-out" oven sides for easy washing. Rotisserie — many other features for a new adventure in cooking.

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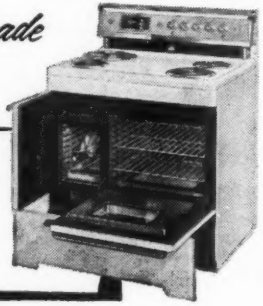

Enjoy Farm Life—
Practice SAFETY
National Farm Safety Week
July 24-30, 1960

Mid-Summer Fashions

9494—Dress with bared-and-squared bodice, skirtful of unpressed pleats; there's a jacket for cover. Printed Pattern in Misses' Sizes 10-18. Size 16 dress takes 3⅜ yards 39-inch; jacket 2½ yards. 35¢

9061—It's a cool sundress for summer, a jumper to wear with its own smart blouse next fall. Printed Pattern in Half Sizes 14½-24½. Size 16½ dress takes 3¼ yards 39-inch fabric; blouse 2⅛ yards 35-inch. 50¢

4802—Vacation wardrobe includes poncho, shorts, pedal pushers, sun top. Match or mix in gayest cottons. Printed Pattern in Jr. Miss Sizes 9-17. Size 13 poncho takes 1¾ yards 35-inch; shorts 1 yard. 35¢

4961—Step-in sheath with wide fashion collar —a go-everywhere favorite. Printed Pattern in Half Sizes 14½-24½. Size 16½ takes 3⅞ yards 35-inch fabric. 35¢

4993—Cool blouses to top skirts, shorts, slacks. Sew them in gay cottons. Printed Pattern in Half Sizes 14½-24½. Size 16½, each style, takes 1½ yards 35-inch fabric. 35¢

9313—Casual style with step-in buttoning, smart collar, smooth details. Printed Pattern in Misses' Sizes 10-18. Size 16 takes 3⅞ yards 35-inch fabric. 35¢

PATTERN 9061 is FIFTY CENTS. PATTERNS 4961, 4993, 9313, 9494, 4802 are THIRTY-FIVE CENTS each. Add 10¢ each for 1st-class mailing. Send orders (with coin) to:

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Pattern Department, P.O. Box 122,
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Send 25c for our exciting Summer Catalogue of Printed Dress Patterns. More than 100 styles for all sizes . . . glowing full-color.

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The Columbiana Pump Co.
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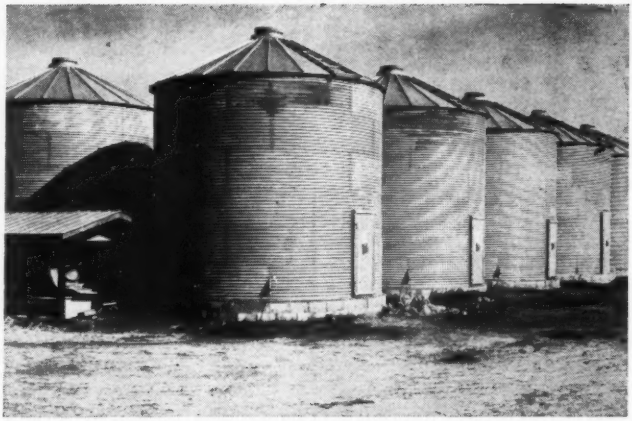
COLUMBIANA, OHIO



Grain drying installation of 10 bins with 33,000-bushel capacity uses unheated air for drying. Fan is in shed at far left; ducts run from fan to all 10 bins.

It's what goes to market that counts . . .

Artificial Drying Cuts Down On Grain Crop Field Losses

The old adage about a bird in the hand worth two in the bush can be applied to grain in the field, says Ben Oswald of Allendale, South Carolina.

Making a good crop does not in itself insure success. The payoff is for what is harvested. And that is where storage and drying come into the picture for Ben and his brother, Johnston, who annually plant about 2000 acres of small grains and corn.

The Oswald brothers have 10 metal bins with a capacity of 33,000 bushels. The two rows of bins connect to an air duct running between them. Unheated air is forced through the duct into the bins for drying grain. Cutoffs for individual bins allow air to be directed to those where it is needed.

With unheated air, the drying system is operated from about 10 until 3 o'clock on clear days, Ben says. He is considering altering the system to provide for heated air. Then the drier could be operated continuously in any weather, and the heated air would speed up drying. This would allow the Oswalds to move grain through the bins faster and thereby step up their capacity.

Dry 22% Moisture Grain

The system uses a centrifugal fan driven by a 20 hp electric motor to move air into the bins. Grain harvested with moisture content as high as 22% has been dried successfully, Ben states.

How has drying paid them in the three years they have used the installation?

"We harvest a greater percent-

Centrifugal fan driven by 20 hp electric motor forces air through main duct that extends between two rows of bins.

Weatherproof receptacles like this one with wiring in conduit are handy for operation of electric motors used on augers for loading and unloading bins.

age of our crop. Field losses are reduced." They don't have to wait for the grain to field-dry. They begin harvesting earlier while the crop is standing and the moisture content is higher.

A good example of how profitable this can be occurred last year. The Oswalds got most of their 500 acres of corn out of the fields in August, and had only four or five acres left when the winds and rains of Hurricane Gracie struck. Many of their neighbors had not started harvesting.

Made Their Own Luck

"Folks said we were lucky," Ben recalls. But he feels they made their own luck when they invested in the drying setup.

Another advantage the Oswalds find is that they can put in longer days in their fields during small grain harvest. With a drier, Ben explains, we don't have to worry about a little dew on the grain in the mornings or evenings. We start early and work late, figuring all the time that it may rain the next day.

Sometimes Enjoy Price Advantage

In some instances, Ben says, they have received a better price for their grain as a result of using the drier. For example, bright oats harvested before a rain brought them more money than oats from the same field harvested after the rain. "We couldn't have cut any of the oats ahead of the rain if we hadn't been able to dry them," he emphasizes. □□

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Full many a poker loss can be attributed to a man's sitting up with a SLICK friend. . . . . SODDEN THOUGHT: MANY a PROPER person who wouldn't THINK of TALKING with his MOUTH FULL insists on talking with his head EMPTY. . . . . Friend of ours confides his wife does BIRD imitations. Says she WALKS like a DUCK, EATS like an OSTRICH—and watches HIM like a HAWK. . . . . SNICKER-SNORT-OF-THE-MONTH: A mountaineer and his wife visited the city and saw paving and concrete sidewalks for the FIRST time. Scraping his foot on the hard surfaces, the old boy said to his wife: "I kain't blame 'em fer buildin' the town here. That there ground is SO dang hard they COULDN'T plow it NOHOW!" . . . . Have you heard the story about the hen-pecked little man who MISSED his wife's cooking—EVERY chance he got! . . . . OLD-SAW-NEW-TEETH DEPT.: A thing of beauty is a joy forever—PROVIDING you DON'T look at her BEFORE she has a chance to MAKE UP. . . . . A TEXAS newspaper is running a contest on "WHY I AM GLAD TO BE A TEXAN," in 25,000 words or less. . . . . EVERSTOPTOTHINK?—What SOME people DON'T know about DRIVING would FILL a HOSPITAL. . . . . Have you heard "THE EGOTIST SONG"? It goes like this, "The girl that I love LOVES the girl that I love MORE than the girl that I love loves me." Complicated, isn't it? . . . . VOLKSWAGEN AD: "THINK SMALL." . . . . Being an election year, we are SURE to hear some FINE, STRAIGHTFORWARD DODGING of ISSUES. Voters have one consolation, though. MOST of the TERRIBLE things one candidate predicts WILL happen if the OTHER is ELECTED, WON'T. . . . . HOUSEWORK: something a woman does that NOBODY notices UNLESS she DOESN'T do it. . . . . RIDDLE-OF-THE-MONTH: WHY is a CLOCK the MOST MODEST piece of furniture? ANSWER: BECAUSE, kiddies, it RUNS DOWN its OWN works while it COVERS its FACE with its HANDS. (Caw! CAW!). . . . . SHORTEST SHORT STORY: He jilted Helen. Helen sued. He married Helen. Hell ensued.

Your pun-peddler—DUFFY

Cover Story

Egg Collecting And Feeding . . . On Wheels

A versatile piece of equipment saves steps and labor in a caged layer operation at Lake Edmund Farm, Cleburne County, Alabama. It is a 3-wheel cart powered by four 6-volt storage batteries. It is used for transporting up to 500 lbs. of feed or 18 baskets of eggs (photo below). Easy to operate, it can be driven between rows of cages in a laying house (photo above). It operates quietly, without disturbing the hens or giving off noxious fumes. □ □

NOW! Winter-safe hog farrowing with EASY-HEAT

EASY-HEAT has made it so simple to install electric heat in concrete! Galvanized steel mesh mats, with heater wire anchored in place, simply roll out in 6' or 10' lengths. These 18" wide units will not float as concrete is poured—uniformly even heat is assured. Farrowing is practical all winter long! EASY-HEAT is also ideal to dry and warm milkhouse floor.

Ask your power company fieldman, or write for literature.

EASY-HEAT, INC.,
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Dept. EF, Lakeville, Indiana

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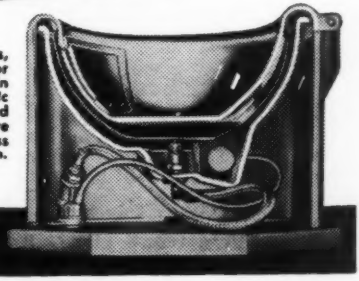

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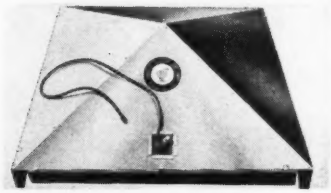

New automatic dial control —no thermometer needed.

With a Bailey Electric Brooder you are assured of lower brooding costs, constant temperature and completely safe operation. Why? Because this 750-chick, quality constructed brooder was designed by experienced poultrymen with the advice of agricultural and electrical engineers.

Georgia Poultrymen report the Bailey electric brooder cuts wintertime brooding cost ½ cent per chick.

What's more, Bailey Brooders are clean, safe and convenient. No wonder more than 4,500 of these units are in operation on Georgia broiler farms. Write today for information on how you can substantially increase your broiler profits by installing Bailey Brooders.

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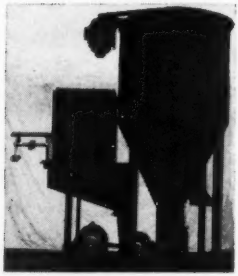

Capacity Per Hour		Add For Single Phase
2 Tons	$1645.00	$275.00
3 Tons	$2000.00	$522.00
4 Tons	$2415.00	$657.00

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ROSS MANUFACTURING COMPANY
Brownsville, Tennessee

Hand-operated post drill was converted into an electric-driven drill press by mounting the drill in a fixed position and fitting a V-belt on the balance wheel and on the motor pulley.

State FFA Mechanics Champ

Makes Post Drill Into Drill Press

By A. G. SHEPHERD, JR.*

A little ingenuity sometimes will save a lot of hard work and make an old tool more valuable. Take a hand-operated post drill, for example. John Louis Pepper converted his into an easily-used drill press driven by a small electric motor.

A Future Farmer at Benton, Mississippi, John welded the drill in a fixed position. Then he fitted a V-belt on the balance wheel and on the motor pulley. Motors from ¼ to ½ hp usually are suitable for this purpose.

Living up to the lines of the FFA creed, "I believe in the promise of better days through better ways," John started from scratch to develop a farm shop. He built a shop building, using lumber that he salvaged from an old tenant house. He constructed a welding table and work benches. And he wired the shop with 115 and 230-volt circuits so that he can use a variety of electric tools, including the welder, to speed equipment repairs.

His ingenuity and his efforts paid an extra dividend last year when he was selected for Mississippi's FFA Farm Mechanics award. □ □

*Vo-Ag Division, Miss. Dept. of Education.

WHAT'S NEW

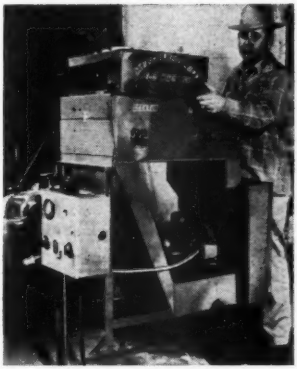
Silo Unloading Adaptor Door

A silo unloading adaptor door permits auger removal of high moisture corn without letting air into sealed silo. The "Cardinal

Flex-Seal" door, made by LML Engr. & Mfg. Corp., Columbia City, Ind., has an innertube seal which allows auger to be inserted at different angles in silo.

Automatic Grinder-Blender

The "Auto-Blend Mill" automatically grinds and blends a complete poultry, hog or cattle ration of 3 to 5 ingredients—all while the farmer is elsewhere. A timer controls length of time 3



hp mill operates, and mercury switches shut unit off should any ingredient run dry or not feed into mill correctly. E-Z Way Co., 3105 E. Chestnut, Decatur, Ill.

Motor Maintenance Handbook

Protective Maintenance of Motors and Generators is a 63-page handbook published by Renewal Parts Section, National Electrical Mfrs. Assn., 155 E. 44 St., N.Y. 17, N.Y. This ready reference is primarily designed for people in electric motor maintenance and repair work, such as equipment dealers, ag. extension people, power supplier rural reps., agric. engineers, vo-ag teachers, etc. Single copies free on request.

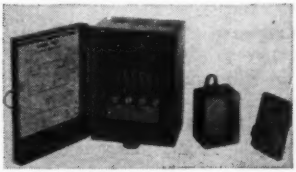
Insect-Killing Post Lantern

The Detjen Corp., Pleasant Valley, N.Y., has a new type photoelectric post lantern with a grid

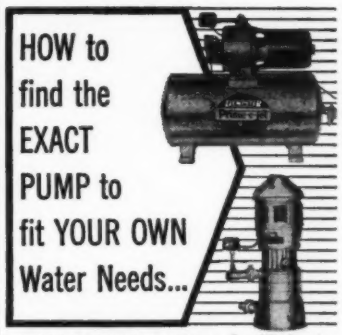
around the bulb to electrocute night-flying insects attracted to the light. Besides the electric eye, which turns it on at dusk and off at dawn, the lantern comes with post and electric outlet.

Poultry House Photoelectric Control

A 6000-watt poultry house photoelectric light control that eliminates need for relay switches is now on the market. It is the model 6801, made by the Fisher-Pierce Co., Inc., 170 Pearl St., So. Brain-



tree 85, Mass. When coupled with a time clock, this unit provides complete light control for the average-size poultry house.



THE COMPLETE RANGE of efficient, durable Dempster water systems sold by your Dempster dealer offers you the one solution best suited to your water supply needs —whether price, capacity, pressure, depth, or quality is the big factor. From the compact Dempster Prime-O-Jet to the powerful Multi-Stage Jetmaster, each Dempster pump is tops in performance, durability and guarantee of satisfaction . . . backed by Dempster's 80 years of water system experience. Select the one best suited for *your* needs from the complete line at your Dempster dealer's *now!*

WATER SUPPLY DEMPSTER EQUIPMENT

DEMPSTER MILL MFG. CO.
Beatrice, Nebraska

YOUR GRAIN IS SAFE

. . . when you know the moisture content. The SAFE-CROP Moisture Tester tests all grains. It is accurate, portable and simple to operate. Nothing else to buy, the SAFE-CROP is a precision instrument yet is priced within reach of every farmer.
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BURROWS EQUIPMENT COMPANY
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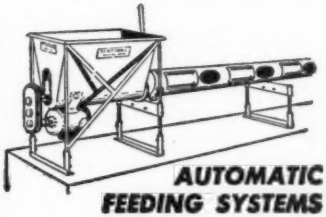

AUTOMATIC FEEDING SYSTEMS
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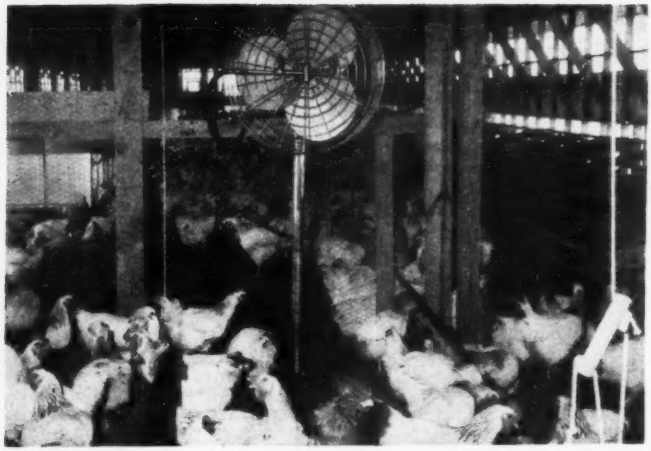

Mounted on metal stands, 18-inch fan-foggers keep warm air above birds in motion, have evaporative effect too. Other fan-foggers are suspended from ceiling joists.

To keep laying hens healthy . . .

Fan-Foggers Provide Ventilation Plus Cooling

Proper ventilation of poultry houses is one of the keys to keeping laying flocks healthy, declares Lee Chipman. He looks after thousands of breeder hens on the Nichols Southeast, Inc., farm at Greensboro, Georgia.

Air movement is essential to pass out ammonia fumes that come from the droppings, Chipman explains. If not removed, these fumes result in burns on the eyes, blisters on the breasts and burns on the foot pads of hens.

Hot weather, which usually causes layer production to drop off, holds added dangers for the breeding flock. It also affects size of egg, hatchability and chick quality, Chipman says.

Laying houses at the Nichols Southeast farm are constructed with ridge ventilators and are open on either side to permit cross ventilation. This takes full advantage of natural air movement. To supplement this, fan-foggers are used. These units, suspended from overhead joists, have two nozzles that spray a fine mist in front of the ⅓ hp, 18-inch fan. They are located so that they keep the warm air above the birds in motion, passing some of it out through the ridge ventilators. Care is taken to insure that none of the fans blow on the birds.

Chipman says the fans are effective in reducing production losses and mortality due to high temperatures. In the 36 x 440-ft. houses, he allows 3½ sq. ft. per hen. The layers average 6½ to 7 lbs. He figures on one fan-fogger for 375 hens or about 1300 sq. ft. Whenever temperature in the houses gets above 85°, he starts the fans. □ □

ADVERTISERS
in this issue . . .

Whenever you need further information about electrical equipment and appliances, you can depend upon the Manufacturers who are advertising in this magazine. We have indexed here for your convenience in alphabetical order the Manufacturers whose advertising is appearing in this June-July issue.

When writing to these Manufacturers be sure to mention you saw their advertising in ELECTRICITY ON THE FARM Magazine.

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If you are unable to get information about the particular equipment you require from our advertisers as listed above, our Reader Service Department will be glad to help you. As a reader of this magazine you are entitled to this information service free of cost.

farm

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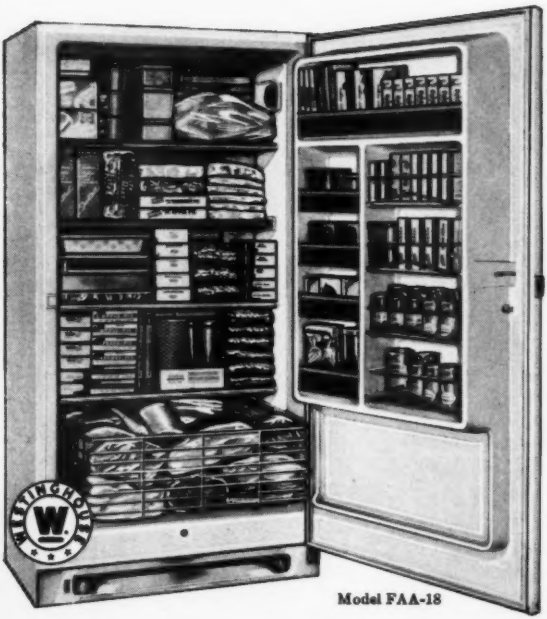
LOW PRICE



Model FAA-18

PLUS FAMOUS WESTINGHOUSE DEPENDABILITY

A freezer is an important investment. So, why buy an unknown brand, when for little if any more money you can own a *Value-Assured* Westinghouse Freezer . . . proved for reliability . . . world-famous for quality . . . a freezer offering you every new advance plus a *double* warranty, one on the freezer, one on the food! Before you buy any freezer, compare the quality with a Westinghouse —then compare the price!

TAKE THIS CHECK LIST WITH YOU WHEN YOU SHOP FOR A FREEZER!

WESTING-HOUSE	OTHERS	
☑	☐	Efficient Air-Sweep shelves circulate cold air better . . . keep packages from sticking
☑	☐	Roll out baskets for bulky packages—ideal for roasts, poultry, odd-shaped parcels
☑	☐	Handy Tilt-Down Racks to keep often-used foods at your fingertips
☑	☐	Four adjustable door shelves move up and down, adjust for easy storage of extra-tall packages
☑	☐	Clean, squared-away design lets freezer fit in to look "built-in"
☑	☐	Built-in tumbler lock to protect your food supply
☑	☐	Factory protection plan on the entire freezer, including the sealed-in mechanism
☑	☐	Three-year warranty against food spoilage at no extra cost
☐	☐	Price?

CHECK THE LOW WESTINGHOUSE PRICE TODAY...YOU'LL BE AMAZED!

Model FEA-21

GIANT CAPACITY CHEST TYPES, TOO!

Deluxe porcelain liner will give you long, trouble-free life; can't rust; wipes clean in a jiffy. Other quality features: Seal-Tite lid for a tight, sure seal; quick-freeze compartment; lift-out baskets for often-used foods; tumbler lock; Guard Lite; adjustable temperature control; factory protection plan and 3-year food warranty.

See the complete line of Westinghouse Chest and Upright Freezers from 9 to 21 cu. ft. capacities.

YOU CAN BE SURE...IF IT'S Westinghouse

Westinghouse Electric Corp., Major Appliance Div., Columbus, Ohio. Tune in Westinghouse—CBS TV-Radio Coverage, Presidential Conventions, July 10-29

MR. H. N. YOUNG
DIR. AGRIC. EXP. STA.
POLYTECHNIC INST.
BLACKSBURG, VA.

At left, Guy C. Malbon shows VEPCO Rural Representative Milton Woodlief the grain conveyor system. At right, with the farm's batch dryer in the background, he points out the electrical distribution center.

Va. Farmers Lick Grain Growing Risk with ELECTRIC Drying Operation

One of the finest things about drying and handling grain electrically is the economy, report the Malbon brothers of Princess Anne County, Virginia. "The complete drying installation permits efficient drying and conveying of grain for about ¼¢ worth of electricity per bushel." And the brothers William, Thomas, Guy and Paul say their electric drying installation takes much of the risk out of grain farming.

Before they installed dryers, the brothers suffered from both local market uncertainties and hurricane crop loss on their coastal farm. Since they electrically mechanized grain drying and handling, they report successful production and sales each season.

A batch dryer handles up to 125 bushels of corn, soybeans, wheat, oats or barley per hour. To operate the dryer and circulate grain, they have one 7½ H.P. electric motor to drive the fan . . . another to drive the auger conveyors. Their installation also includes storage bins with 20,000 bushels capacity, a 60-foot vertical 3 H.P. grain elevator which can handle 1200 bushels per hour, several 2 H.P. conveyors and a 5 H.P. forced heated-air dryer, with humidistat control, is attached to a 3300 bushel bin.

A 200 ampere centralized wiring system provides ample power for the brothers' drying installation, for the farm shop and the farm home. And these modern Virginia farmers planned ahead. There's enough electric power now in reserve to answer their needs next year when they double their grain storage capacity.

ASK YOUR VEPCO RURAL REPRESENTATIVE for help in planning and figuring any phase of Better Electric Farming.

VIRGINIA ELECTRIC and POWER COMPANY

VEPCO FARM BETTER ELECTRICALLY